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DATE: November 17, 2010

TO: Don Bussey, EPA/ERT Work Assignment Manager

THROUGH: Rick Leuser, SERAS Deputy Program Manager

FROM: Martin Ebel, SERAS Task Leader

SUBJECT: TECHNICAL MEMORANDUM – TENTATIVELY IDENTIFIED COMPOUNDS IN  
UNDERGROUND STORAGE TANKS AND ENVIRONMENTAL SAMPLES  
29 RIVERSIDE AVENUE SITE, NEWARK, NEW JERSEY,  
WORK ASSIGNMENT SERAS-089

#### INTRODUCTION

The United States Environmental Protection Agency (EPA) Region 2 requested the EPA - Environmental Response Team (ERT) to conduct a subsurface investigation of a portion of the facility at 29 Riverside Avenue in Newark, New Jersey. The site encompasses two multistory buildings designated as Buildings 7 and 12, 10 underground storage tanks (UST), and formerly held numerous above ground storage tanks (AST). Environmental samples were collected from the soil, sediment and groundwater and analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC) and Target Analyte List (TAL) inorganics.

Laboratory analysis of the samples collected by personnel from the Scientific, Engineering, Response and Analytical Services (SERAS) contract for VOCs and SVOCs indicated the presence of numerous organic compounds not included in the target list and were categorized as tentatively identified compounds (TICs). Compounds were tentatively identified if the results of the laboratory analysis gave an 85 percent confidence of the compounds presence when compared to a computer-based library; otherwise, the compound was listed as unknown and numbered with the number increasing with retention time. Numerous TICs were present in all three media sampled at the site.

#### BACKGROUND

On May 26 and 27, 2010, 24 subsurface soil samples were collected from 12 soil borings, and on May 28, 7 sediment samples were collected from the Passaic River and groundwater samples were collected from the same locations of the borings. The results of this investigation are provided in the report SERAS-089-DR-110910. Previous to this investigation, two other investigations were completed. PMK conducted an investigation that included exposing the ten USTs and sampling the contents and collecting water samples from the impoundments that

comprised the subbasement in Building 7. The other was conducted by Tetra Tech and also included sampling the subbasement in Building 7.

## RESULTS AND DISCUSSION

In most of the samples, TICs dominated the analytical results for both VOCs and SVOCs, both in the number of compounds and total concentrations. Figures TM1 through TM4 show the total concentration and TIC concentration and percentage for VOCs and SVOCs in soil and sediment and VOCs and SVOCs for groundwater. The TICs are also summarized in Tables 1 through 3, which lists the TICs which were specifically identified, its frequency in the media, and concentration range for each soil, groundwater, and sediment. The soil samples contained 102 distinct compounds, sediment samples had 51, and groundwater samples had 95. These tables do not include TICs denoted unknown which may include up to 20 VOCs and 26 SVOCs for each sample.

The contents of the ten USTs were assessed in an earlier phase of investigating the site (PMK Group, Oct. 2009). The USTs were uncovered and the samples were collected. Tank 4 was empty and Tank 8 had sludge under the liquid and both were sampled resulting in a total of ten samples. Numerous TICs were included in the results, including unknown compounds that were indicated by chemical group (e.g. C3 alkyl benzene), which were not included in the tables. The results of the laboratory analysis of these ten samples are summarized in Table 4. The table includes detected analytes from the VOC and SVOC target compound list (TCL), and the named TICs. PMK Group also sampled the water from the two impoundments in the subbasement of building 7. The VOC and SVOC analytical results are provided in Table 5; the report did not include specific information on the TICs.

Three water and three sediment samples were collected from the subbasement of Building 7 by Tetra Tech (Sept. 2010). Table 6 presents the laboratory data for these samples. The table includes detected analytes from the VOC and SVOC target compound list (TCL), and the named TICs.

Table 7 compares the analytes detected in the subbasement from both investigations with the soil, groundwater, and sediment, respectively. Table 8 compares the analytes detected in the USTs with the soil, sediment, groundwater, and sediment, respectively.

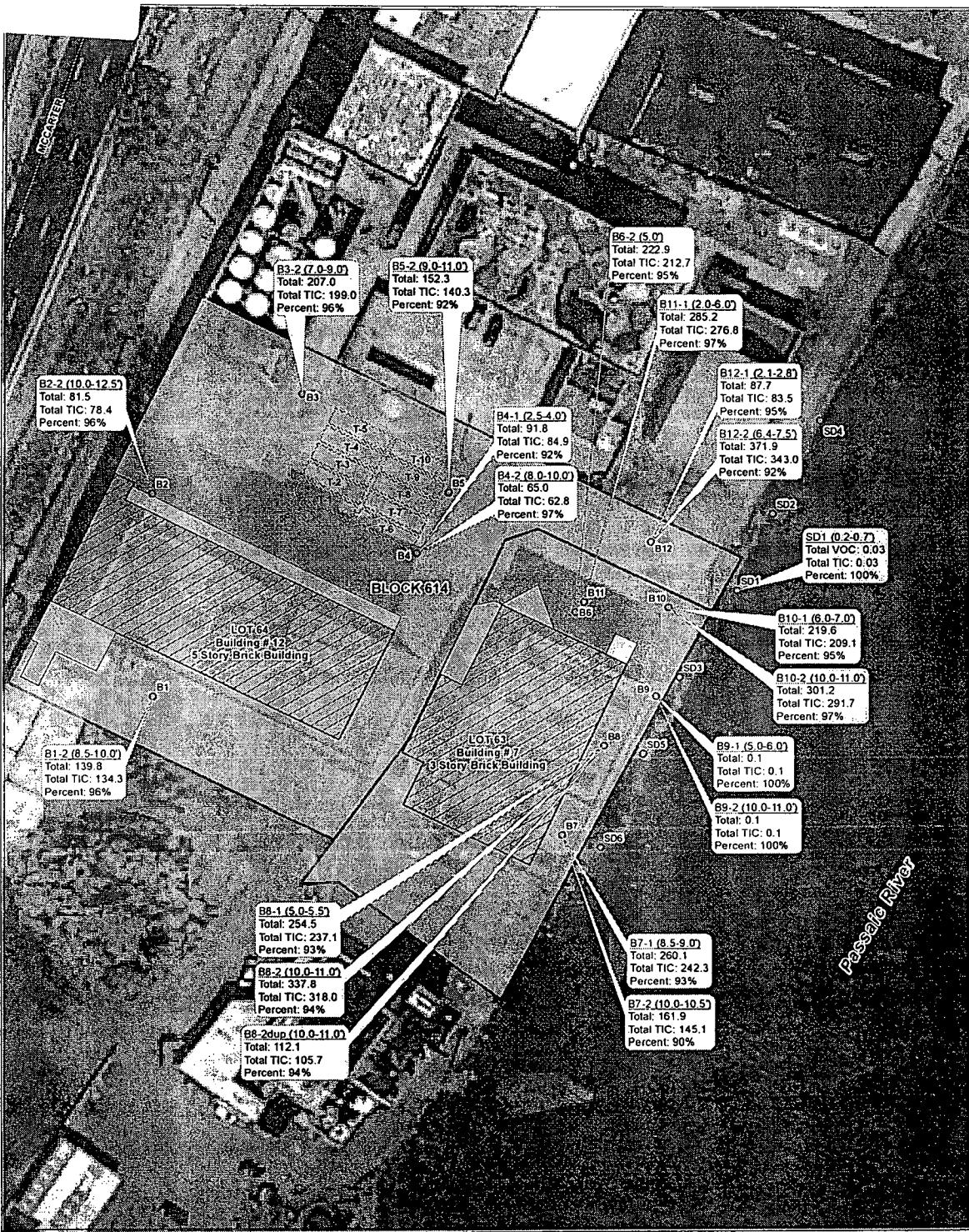
The comparisons take into account differences in how the laboratories report the data. Variations include the truncation of compounds names apparently from number of character limitations and the grouping isomers together differently

Five metals occur in the site soil at concentrations of regulatory concern. Arsenic, barium, beryllium, lead and zinc occur in the soil and in the subbasement sediment. Arsenic, lead, and zinc were detected in the USTs

## CONCLUSIONS

A large number of compounds remain in the USTs and in the subbasement with a large number of these same compounds being in the soil and groundwater and a significant number in the sediment. It appears that there is communication and the transfer of contaminants between these structures and the soil and groundwater on site. It is reasonable to conclude that structures left on site are continuing to contribute contamination to the soil and groundwater on the site. It is also likely that the contaminants are also being transferred to sediment in the Passaic River

**FIGURES**



Map created using 2007 orthoimagery from NGSIN, site survey GPS data, sample results data

Map Creation Date: 06 October 2010

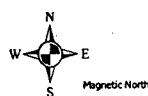
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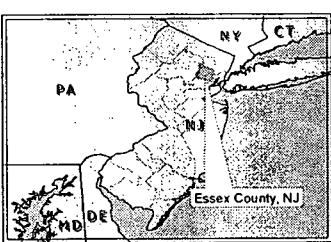
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#### Legend

- Soil Boring Location
- Transformer
- BLDG
- UST
- Loading Dock
- Property Block 614

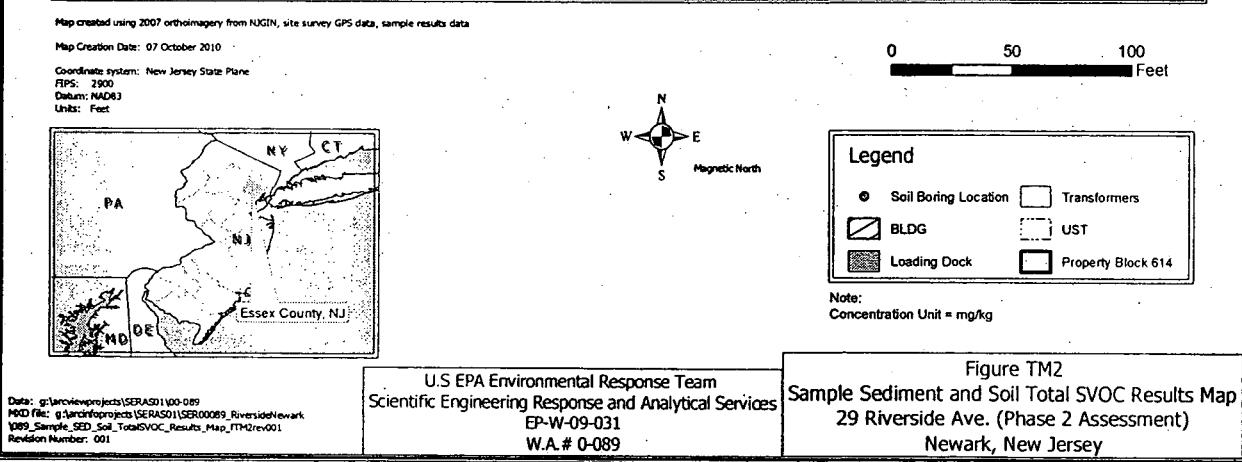
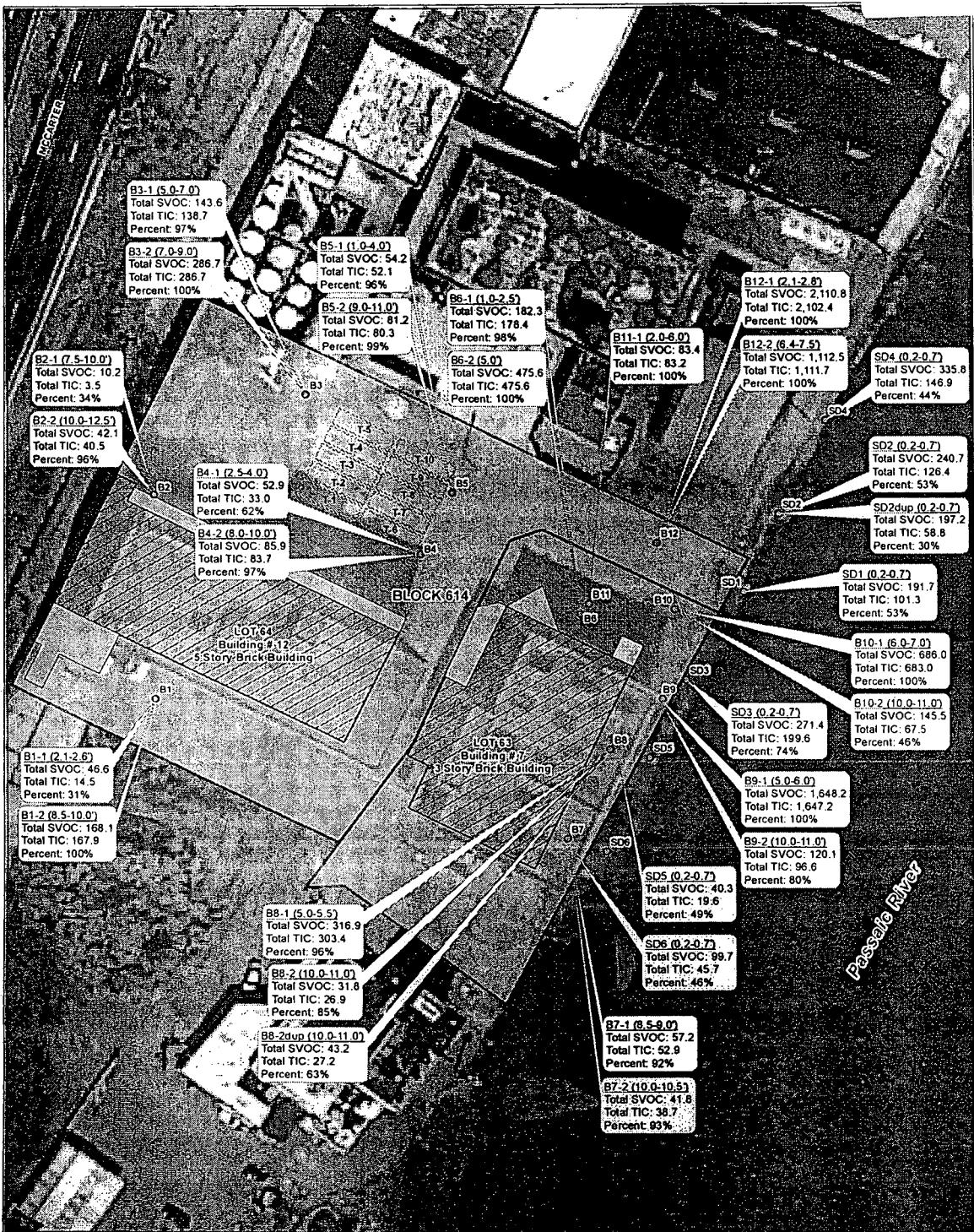
Note:  
Concentration Unit = mg/kg

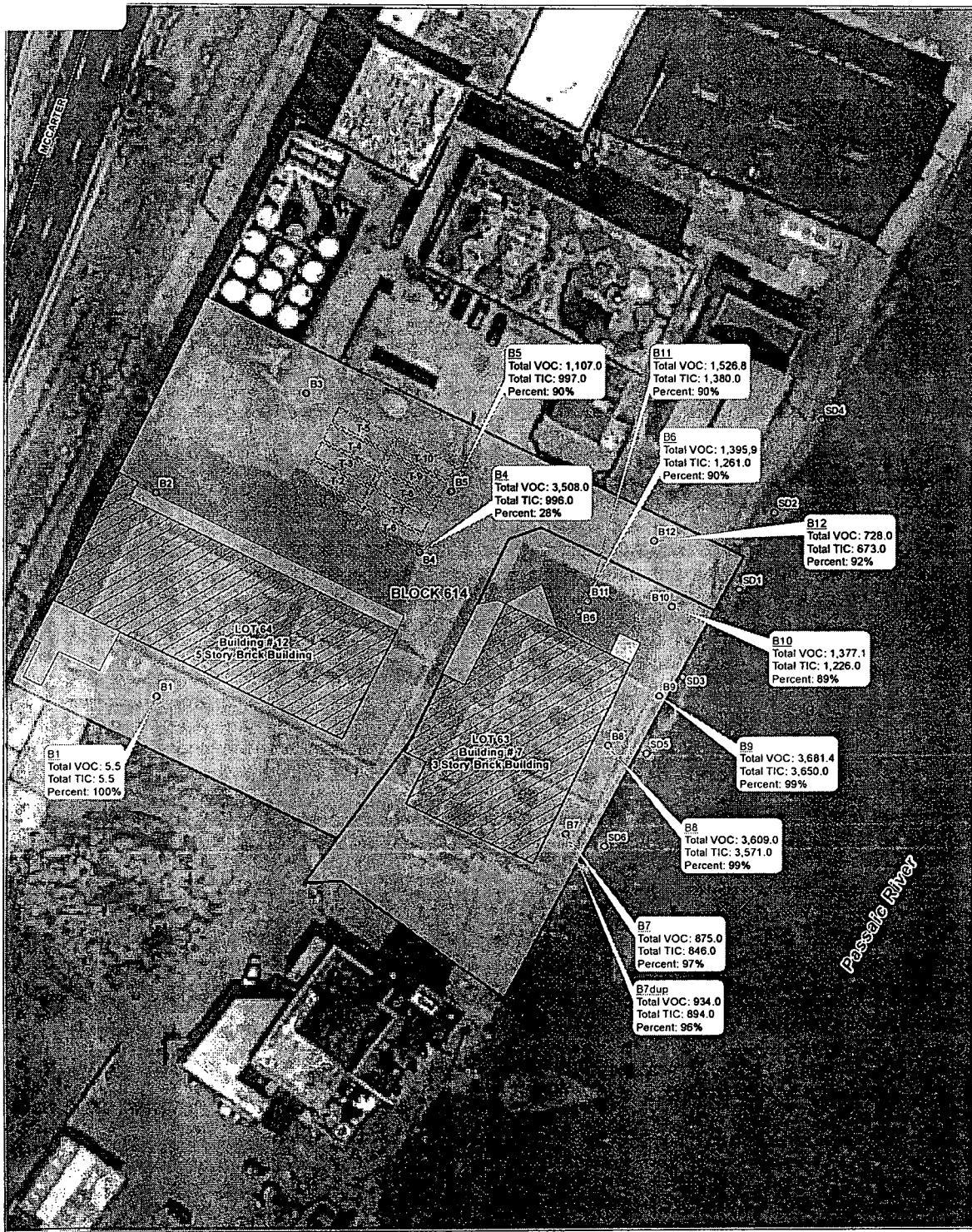


U.S. EPA Environmental Response Team  
Scientific Engineering Response and Analytical Services  
EP-W-09-031  
W.A. # 0-089

Data: g:\warcamp\project\SERAS01\000-089  
Project ID: SERAS01\000-089  
100% Sample SED\_Soil\_TotalVOC\_Results\_Map\_FMRev001  
Revision Number: 001

Figure TM1  
Sample Sediment and Soil Total VOC Results Map  
29 Riverside Ave. (Phase 2 Assessment)  
Newark, New Jersey





Map created using 2007 orthoimagery from NUGIN, site survey GPS data, sample results data

Map Creation Date: 07 October 2010

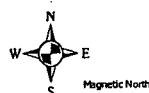
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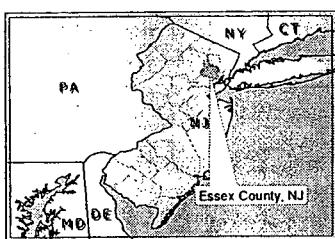
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#### Legend

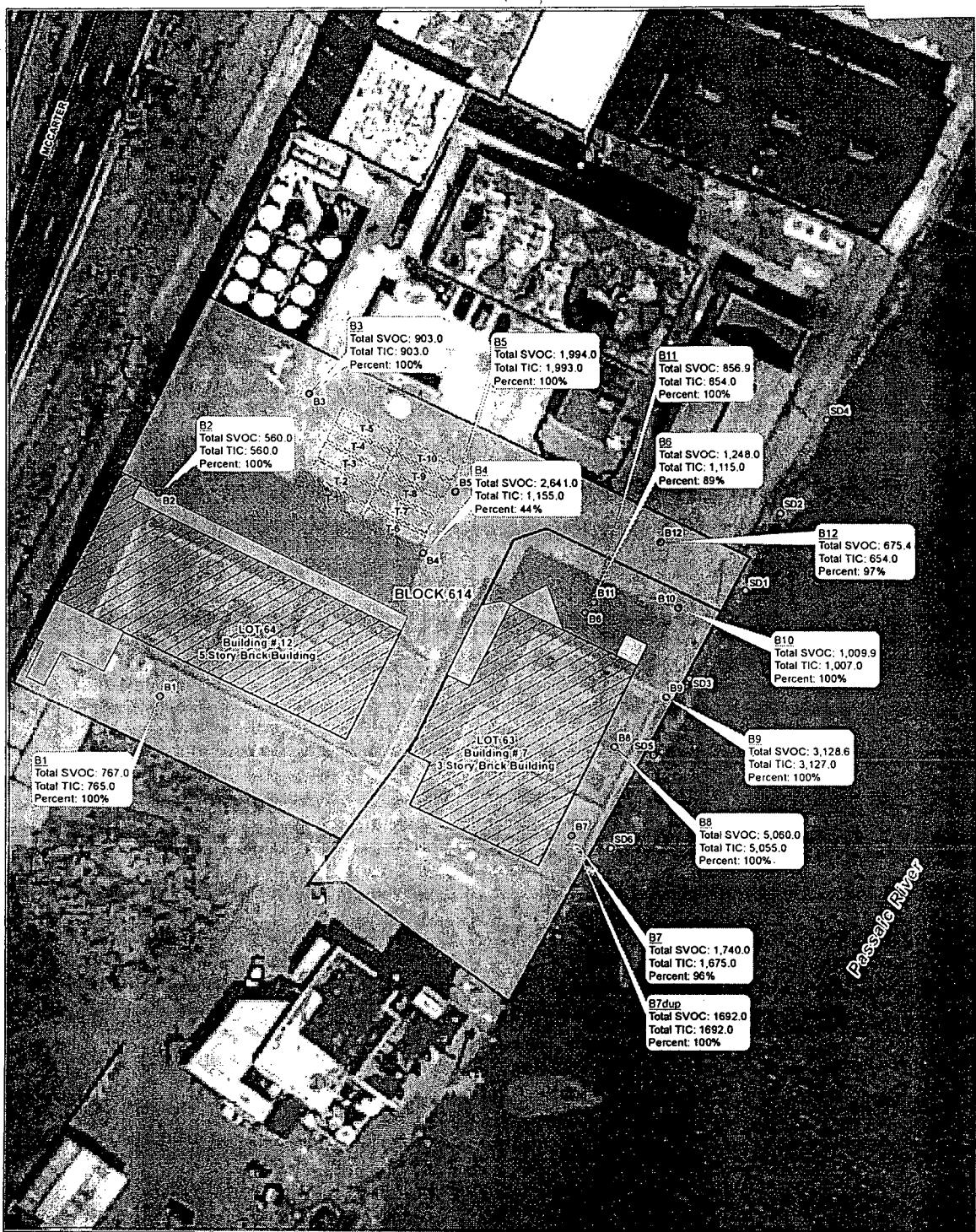
- |                        |                      |
|------------------------|----------------------|
| ● Soil Boring Location | ■ Transformers       |
| ■ BLDG                 | ■ UST                |
| ■ Loading Dock         | ■ Property Block 614 |

Note:  
Concentration Unit =  $\mu\text{g}/\text{kg}$



U.S. EPA Environmental Response Team  
Scientific Engineering Response and Analytical Services  
EP-W-09-031  
W.A. # 0-089

Figure TM3  
Groundwater Sample Total VOC Results Map  
29 Riverside Ave. (Phase 2 Assessment)  
Newark, New Jersey



Map created using 2007 orthoimagery from NJGIN, site survey GPS data, sample results data

Map Creation Date: 07 October 2010

Coordinate system: New Jersey State Plane

EPS: 2000

Datum: NAD83

Units: Feet

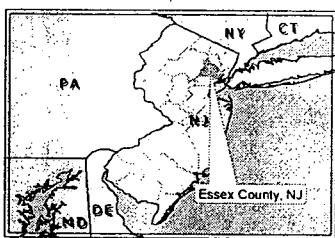
0 50 100  
Feet



#### Legend

● Soil Boring Location	□ Transformers
□ BLDG	□ UST
■ Loading Dock	□ Property Block 614

Note:  
Concentration Unit = µg/kg



U.S. EPA Environmental Response Team  
Scientific Engineering Response and Analytical Services  
EP-W-09-031  
W.A. # 0-089

Figure TM4  
Groundwater Sample Total SVOC Results Map  
29 Riverside Ave. (Phase 2 Assessment)  
Newark, New Jersey

**APPENDIX A  
SUMMARY TABLES**

Table 1  
Summary of Tentatively Identified Compounds in Soil Samples\*  
Riverside Avenue Site, Newark, New Jersey

<b>Tentatively Identified Compounds</b>	<b>Frequency of</b>	<b>Range of</b>	<b>Range of Detected Concentrations</b>		
	<b>detection</b>	<b>Sample Quantitation</b>	<b>Low</b>	<b>High</b>	<b>Unit</b>
1,2,4,5-Dibenzopyrene	1	NA	2800		ug/Kg
1,3-Diphenyl-3-methylcyclopropene	1	NA	2900		ug/Kg
10,18-Bisnorabeta-5,7,9(10),11,13-penta	16	NA	500	95000	ug/Kg
10,18-Bisnorabeta-8,11,13-triene	10	NA	360	100000	ug/Kg
11H-Benzo[a]fluoren-11-one	1	NA	1300		ug/Kg
11H-Benzo[b]fluorene	3	NA	210	3700	ug/Kg
18-Norabietane	9	NA	2000	530000	ug/Kg
1-Decanol, 2-hexyl-	1	NA	1500		ug/Kg
1H-Indene, 2,3-dihydro-1,2-dimethyl-	1	NA	5000		ug/Kg
1H-Indene, 2,3-dihydro-4-methyl-	1	NA	9700		ug/Kg
1H-Indene, octahydro-, cis-	10	NA	4400	23000	ug/Kg
1-Phenanthrenecarboxylic acid, 1,2,3,4,4	1	NA	12000		ug/Kg
2-Butene, 3-chloro-1-phenyl-, (Z)-	1	NA	3900		ug/Kg
2-Phenylnaphthalene	2	NA	780	2600	ug/Kg
3,5-Dimethyl-3-heptene	1	NA	12000		ug/Kg
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahy	14	NA	480	36000	ug/Kg
4b,8-Dimethyl-2-isopropylphenanthrene, 4	14	NA	600	31000	ug/Kg
4H-Cyclopenta[def]phenanthrene	4	NA	540	9500	ug/Kg
4-Nitrosophenyl-beta.-phenylpropionate	1	NA	100		ug/Kg
4-Octen-3-one	1	NA	5400		ug/Kg
9,10-Anthracenedione	2	NA	150	1400	ug/Kg
9H-Fluoren-9-one	1	NA	320		ug/Kg
Adamantane, 1,3-dimethyl-	1	NA	2100		ug/Kg
Anthracene, 1-methyl-	6	NA	88	1400	ug/Kg
Benz[a]anthracene, 7-methyl-	1	NA	83		ug/Kg
Benzene, (1-methylethyl)-	2	NA	1800	5400	ug/Kg
Benzene, 1,2,4,5-tetramethyl-	16	NA	620	54000	ug/Kg
Benzene, 1,2-diethyl-	8	NA	940	14000	ug/Kg
Benzene, 1,2-dimethyl-3-nitro-	1	NA	3200		ug/Kg
Benzene, 1,2-dimethyl-4-nitro-	1	NA	840		ug/Kg
Benzene, 1,3,5-trimethyl-	1	NA	890		ug/Kg
Benzene, 1,3-diethyl-	3	NA	960	13000	ug/Kg
Benzene, 1,4-diethyl-	2	NA	1800	3200	ug/Kg
Benzene, 1,4-diethyl-2-methyl-	2	NA	1800	4500	ug/Kg
Benzene, 1-chloro-2-nitro-	1	NA	470		ug/Kg
Benzene, 1-ethenyl-4-ethyl-	1	NA	1100		ug/Kg
Benzene, 1-ethyl-2,3-dimethyl-	4	NA	2100	18000	ug/Kg
Benzene, 1-ethyl-2,4-dimethyl-	7	NA	400	12000	ug/Kg
Benzene, 1-ethyl-3,5-dimethyl-	2	NA	16000	31000	ug/Kg
Benzene, 1-methyl-2-(1-methylethyl)-	1	NA	6100		ug/Kg
Benzene, 1-methyl-4-(1-methylethyl)-	1	NA	2500		ug/Kg
Benzene, 1-methyl-4-(1-methylpropyl)-	2	NA	3300	5900	ug/Kg
Benzene, 1-methyl-4-(2-propenyl)-	3	NA	690	8000	ug/Kg
Benzene, 2,4-diethyl-1-methyl-	2	NA	3000	5000	ug/Kg
Benzene, 2-ethenyl-1,4-dimethyl-	1	NA	4600		ug/Kg
Benzene, 2-ethyl-1,3-dimethyl-	2	NA	3300	11000	ug/Kg
Benzene, 2-ethyl-1,4-dimethyl-	3	NA	3000	59000	ug/Kg

Table 1  
Summary of Tentatively Identified Compounds in Soil Samples\*  
Riverside Avenue Site, Newark, New Jersey

	Frequency of detection	Range of Sample Quantitation	Range of Detected Concentrations		Unit
			Low	High	
Tentatively Identified Compounds					
Benzene, pentamethyl-	1	NA	1600		ug/Kg
Benzene, propyl-	1	NA	5900		ug/Kg
Benzo[b]naphtho[2,1-d]thiophene	1	NA	89		ug/Kg
Benzo[b]triphenylene	2	NA	300	600	ug/Kg
Benzo[e]pyrene	4	NA	150	3200	ug/Kg
Benzo[j]fluoranthene	1	NA	2800		ug/Kg
Cholestan-3-one	1	NA	2200		ug/Kg
Cholestan-3-one, (5.alpha.)-	1	NA	6000		ug/Kg
Cyclobuta[1,2:3,4]dicyclopentene, 1,3a,3	2	NA	35000	44000	ug/Kg
Cyclohexanone, 3,3,5-trimethyl-	1	NA	140		ug/Kg
Cyclopenta(cd)pyrene, 3,4-dihydro-	1	NA	1400		ug/Kg
Decahydro-4,4,8,9,10-pentamethylnaphthal	3	NA	3300	6100	ug/Kg
Decane, 4-methyl-	1	NA	0		ug/Kg
Dibenzofuran, 4-methyl-	1	NA	170		ug/Kg
Dibenzothiophene	2	NA	430	1900	ug/Kg
Dibenzothiophene, 4-methyl-	1	NA	1100		ug/Kg
Dodecyl acrylate	2	NA	400	610	ug/Kg
Fluoranthene, 2-methyl-	2	NA	650	1300	ug/Kg
Naphthacene	1	NA	3400		ug/Kg
Naphthalene, 1,2-dimethyl-	1	NA	110		ug/Kg
Naphthalene, 1,3-dimethyl-	1	NA	1800		ug/Kg
Naphthalene, 1,4,6-trimethyl-	1	NA	1100		ug/Kg
Naphthalene, 1,6-dimethyl-4-(1-methyleth	2	NA	720	770	ug/Kg
Naphthalene, 1-ethyl-	1	NA	600		ug/Kg
Naphthalene, 1-methyl-	2	NA	1600	9000	ug/Kg
Naphthalene, 2,3-dimethyl-	2	NA	310	1800	ug/Kg
Naphthalene, 2,6-dimethyl-	1	NA	410		ug/Kg
Naphthalene, 2,7-dimethyl-	4	NA	1700	10000	ug/Kg
Naphthalene, 2-phenyl-	1	NA	110		ug/Kg
Naphthalene, decahydro-	9	NA	320	26000	ug/Kg
Naphthalene, decahydro-, trans-	15	NA	1100	59000	ug/Kg
Naphthalene, decahydro-2-methyl-	2	NA	1400	2200	ug/Kg
Naphtho[3,4:2,3]bornene	1	NA	7600		ug/Kg
n-Hexadecanoic acid	7	NA	130	26000	ug/Kg
Octadecanoic acid	3	NA	140	4300	ug/Kg
Oleic Acid	2	NA	9900	53000	ug/Kg
Pentalene, octahydro-2-methyl-	2	NA	2700	7500	ug/Kg
Perylene	3	NA	100	3200	ug/Kg
Phenanthrene, 1-methyl-	1	NA	2000	4700	ug/Kg
Phenanthrene, 1-methyl-7-(1-methylethyl)	11	NA	340	12000	ug/Kg
Phenanthrene, 3,6-dimethyl-	1	NA	1400		ug/Kg
Phenanthrene, 4,5-dimethyl-	1	NA	640		ug/Kg
Phenanthrene, 4-methyl-	1	NA	3600		ug/Kg
Phenol, 2-(1,1-dimethylethyl)-5-methyl-	3	NA	330	720	ug/Kg
Phenol, p-tert-butyl-	2	NA	190	490	ug/Kg
Phosphoric acid, trioctyl ester	1	NA	28000		ug/Kg
Phosphoric acid, tris(2-ethylhexyl) este	1	NA	2800		ug/Kg

**Table 1**  
**Summary of Tentatively Identified Compounds in Soil Samples\***  
**Riverside Avenue Site, Newark, New Jersey**

<b>Tentatively Identified Compounds</b>	<b>Frequency of detection</b>	<b>Range of Sample Quantitation</b>	<b>Range of Detected Concentrations</b>		<b>Unit</b>
			<b>Low</b>	<b>High</b>	
Phthalic anhydride	1	NA	170		ug/Kg
Pyrene, 1-methyl-	1	NA	1300	2100	ug/Kg
Pyrene, 4-methyl-	1	NA	370		ug/Kg
Stannane, tributylchloro-	1	NA	10000		ug/Kg
Stigmast-4-en-3-one	1	NA	4000		ug/Kg
trans-Decalin, 2-methyl-	2	NA	690	2100	ug/Kg
Tricyclo[3.3.3.0(1,5)]undec-6-ene-2,3,6-	1	NA	870		ug/Kg
Triphenylene, 2-methyl-	1	NA	1400		ug/Kg

\*TRIP REPORT - SOIL, SEDIMENT, AND GROUNDWATER SAMPLING, 29 RIVERSIDE AVENUE SITE, NEWARK, NEW JERSEY  
Lockheed Martin (SERAS), Nov. 2010

Table 2  
Summary of Tentatively Identified Compounds in Groundwater Samples\*  
Riverside Avenue Site, Newark, New Jersey

	Frequency of detection	Range of Sample Quantitation	Range of Detected Concentrations		
Tentatively Identified Compounds			Low	High	Unit
1,3,4-Metheno-1H-cyclobuta[cd]pentalene,	1	NA	120		ug/L
1,3-Dimethylcyclohexane	1	NA	27		ug/L
1-Buten-3-yne, 2-methyl-	2	NA	24	31	ug/L
1-Ethyl-3-methylcyclohexane (c,t)	1	NA	24		ug/L
1-Ethyl-4-methylcyclohexane	1	NA	46		ug/L
1H-Indene, 2,3-dihydro-1,1-dimethyl-	1	NA	10		ug/L
1H-Indene, 2,3-dihydro-1,6-dimethyl-	1	NA	17		ug/L
1H-Indene, 2,3-dihydro-2-methyl-	2	NA	9.6	17	ug/L
1H-Indene, 2,3-dihydro-4-methyl-	1	NA	17		ug/L
1H-Indene, 3a,4,7,7a-tetrahydro-	1	NA	13		ug/L
1H-Indene, octahydro-, cis-	2	NA	14	29	ug/L
1-Methylindan-2-one	2	NA	19	31	ug/L
1-Phenyl-1-butene	2	NA	5.5	30	ug/L
2(1H)-Pyridinone, 5-methyl-	1	NA	15		ug/L
2-Tolyloxirane	1	NA	36		ug/L
3-Penten-1-yne, (E)-	1	NA	27		ug/L
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahy	10	NA	13	550	ug/L
4,7-Methano-5H-inden-5-one, 3,3a,4,6,7,7	2	NA	92	130	ug/L
7-Oxabicyclo[2.2.1]heptane, 1-methyl-4-(	2	NA	28	33	ug/L
8,9-Dihydrodicyclopentadiene	1	NA	13		ug/L
Acetamide, N-(2,3-dimethylphenyl)-	1	NA	22		ug/L
Acetamide, N-(2,5-dimethylphenyl)-	1	NA	34		ug/L
Acetic acid, (2,4-xylyl)-	1	NA	23		ug/L
Benzenamine, 2,4-dimethyl-	1	NA	39		ug/L
Benzenamine, 2,5-dimethyl-	1	NA	1000		ug/L
Benzenamine, 2,6-dimethyl-	1	NA	220		ug/L
Benzenamine, 3,4-dimethyl-	1	NA	8.4		ug/L
Benzenamine, 3,5-dimethyl-	1	NA	45		ug/L
Benzene, (1-methyl-1-butetyl)-	1	NA	46		ug/L
Benzene, (1-methylethyl)-	9	NA	3.7	74	ug/L
Benzene, (1-methylpropyl)-	5	NA	13	24	ug/L
Benzene, (2-methyl-1-propenyl)-	2	NA	12	84	ug/L
Benzene, 1,2,3,4-tetramethyl-	2	NA	5.6	53	ug/L
Benzene, 1,2,3,5-tetramethyl-	3	NA	7.4	30	ug/L
Benzene, 1,2,3-trimethyl-	1	NA	24		ug/L
Benzene, 1,2,4,5-tetramethyl-	8	NA	7.4	64	ug/L
Benzene, 1,2,4-trimethyl-	1	NA	5.4		ug/L
Benzene, 1,2-diethyl-	4	NA	7.9	24	ug/L
Benzene, 1,2-dimethyl-4-nitro-	1	NA	60		ug/L
Benzene, 1,3-diethyl-	8	NA	9.6	29	ug/L
Benzene, 1,4-diethyl-	2	NA	11	17	ug/L
Benzene, 1-butyl-4-methoxy-	1	NA	52		ug/L
Benzene, 1-chloro-2-methyl-	1	NA	6.9		ug/L
Benzene, 1-chloro-4-methyl-	1	NA	7.5		ug/L
Benzene, 1-ethenyl-2-methyl-	1	NA	73		ug/L
Benzene, 1-ethenyl-3-ethyl-	4	NA	9.2	55	ug/L
Benzene, 1-ethyl-2,3-dimethyl-	2	NA	32	48	ug/L
Benzene, 1-ethyl-2,4-dimethyl-	3	NA	9.3	55	ug/L
Benzene, 1-ethyl-3,5-dimethyl-	1	NA	12		ug/L
Benzene, 1-ethyl-3-methyl-	1	NA	50		ug/L
Benzene, 1-methyl-2-(1-methylethyl)-	4	NA	13	25	ug/L
Benzene, 1-methyl-3-(1-methylethyl)-	2	NA	5.8	75	ug/L
Benzene, 1-methyl-4-(1-methylethyl)-	2	NA	6.2	12	ug/L

Table 2  
Summary of Tentatively Identified Compounds in Groundwater Samples\*  
Riverside Avenue Site, Newark, New Jersey

	Frequency of detection	Range of Sample Quantitation	Range of Detected Concentrations		
Tentatively Identified Compounds			Low	High	Unit
Benzene, 2-ethenyl-1,4-dimethyl-	3	NA	12	32	ug/L
Benzene, 2-ethyl-1,3-dimethyl-	3	NA	5.2	25	ug/L
Benzene, 2-ethyl-1,4-dimethyl-	6	NA	21	93	ug/L
Benzene, 4-ethyl-1,2-dimethyl-	1	NA	21	27	ug/L
Benzene, cyclopropyl-	2	NA	12	160	ug/L
Benzene, propyl-	8	NA	7.1	100	ug/L
Benzene, tert-butyl-	1	NA	21		ug/L
Benzoic acid, 2,4,5-trimethyl-	2	NA	7.4	60	ug/L
Benzoic acid, 2,6-dimethyl-	1	NA	23		ug/L
Bicyclo[2.2.1]hept-2-ene, 5-ethenyl-	2	NA	13	32	ug/L
Bicyclo[2.2.1]hepta-2,5-diene, 1,2,3,4,7	1	NA	18		ug/L
Bicyclo[3.2.1]octane	1	NA	6.7		ug/L
Cyclic octaatomic sulfur	9	NA	12	150	ug/L
Cyclobuta[1,2;3,4]dicyclopentene, 1,3a,3	1	NA	590		ug/L
Cyclohexane, 1,4-dimethyl-, cis-	1	NA	0		ug/L
Cyclohexanol, 1-methyl-4-(1-methylethyl)	2	NA	30	49	ug/L
Cyclohexanone, 3,3,5-trimethyl-	1	NA	79	190	ug/L
Cyclotetrasiloxane, octamethyl-	1	NA	11		ug/L
Diboron(.mu.-selenium)diethylbis(.mu.-1	1	NA	18		ug/L
Diisopropyl ether	2	NA	3200	3200	ug/L
Ethanone, 1-(2,3,4-trimethylphenyl)-	1	NA	14		ug/L
Ethyl ether	5	NA	15	53	ug/L
Hexadecanoic acid, methyl ester	1	NA	14		ug/L
Indan, 1-methyl-	1	NA	51		ug/L
Indane	9	NA	5.5	180	ug/L
Mesitylacetic acid	2	NA	49	79	ug/L
Morpholine, 4-acetyl-	1	NA	120		ug/L
N-Cyclohexyl-2-pyrrolidone	2	NA	42	86	ug/L
o-Chloroaniline	3	NA	45	100	ug/L
Octadecanoic acid, methyl ester	1	NA	8.8		ug/L
Pentalene, octahydro-	5	NA	6.4	22	ug/L
Pentalene, octahydro-, cis-	4	NA	5.5	22	ug/L
Phenol, 2-(1,1-dimethylethyl)-4-methyl-	4	NA	10	91	ug/L
Phenol, 2,3,6-trimethyl-	2	NA	22	91	ug/L
Phenol, 2,4,6-trimethyl-	1	NA	21		ug/L
Phenol, 2,6-dimethyl-	1	NA	21		ug/L
Phenol, 4-(1,1-dimethylethyl)-2-methyl-	1	NA	64		ug/L
Phenol, 4-(1,1-dimethylpropyl)-	2	NA	82	88	ug/L
Phenol, m-tert-butyl-	2	NA	240	330	ug/L
Phthalic anhydride	2	NA	21	330	ug/L
Tetracyclo[3.3.1.1(3,7).0(4,6)]decan-2-o	1	NA	130		ug/L
Tricyclo[5.2.1.0(2,6)]dec-3-en-10-ol	1	NA	18		ug/L

\*TRIP REPORT - SOIL, SEDIMENT, AND GROUNDWATER SAMPLING, 29 RIVERSIDE AVENUE SITE, NEWARK, NEW JERSEY  
Lockheed Martin (SERAS), Nov. 2010

Table 3  
Summary of Tentatively Identified Compounds in Sediment Samples\*  
Riverside Avenue Site, Newark, New Jersey

	Frequency of detection	Range of Sample Quantitation	Range of Detected Concentrations		
Tentatively Identified Compounds			Low	High	Unit
10,18-Bisnorabieto-5,7,9(10),11,13-penta	5	NA	940	14000	ug/Kg
10,18-Bisnorabieto-8,11,13-triene	1	NA	790		ug/Kg
11H-Benzo[a]fluorene	1	NA	2400	8300	ug/Kg
12-Azabicyclo[9.2.2]pentadecan-13-one	1	NA	1600		ug/Kg
18-Norabietane	2	NA	650	29000	ug/Kg
1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hex	3	NA	1100	1900	ug/Kg
1H-Inden-1-one, 2,3-dihydro-3,3,5,7-tetr	1	NA	370		ug/Kg
1H-Indene, 2,3-dihydro-1,1,2,3,3-pentame	5	NA	2400	61000	ug/Kg
1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3	5	NA	1800	4300	ug/Kg
1-Pentadecanol	1	NA	850		ug/Kg
2,4-Diphenyl-4-methyl-2(E)-pentene	1	NA	1000		ug/Kg
2-Isopropyl-10-methylphenanthrene	1	NA	720		ug/Kg
4,7-Methano-1H-indene, 3a,4,7,7a-tetrahy	4	NA	740	3100	ug/Kg
4b,8-Dimethyl-2-isopropylphenanthrene, 4	6	NA	450	9000	ug/Kg
6-Tetradecene, (Z)-	1	NA	770		ug/Kg
7-Acetyl-6-ethyl-1,1,4,4-tetramethyltetr	2	NA	700	710	ug/Kg
9H-Tribenzo[a,c,e]cycloheptene	1	NA	5000		ug/Kg
Anthracene, 2-methyl-	1	NA	2100		ug/Kg
Azobenzene	3	NA	1800	3000	ug/Kg
Azoxybenzene	1	NA	1500	2100	ug/Kg
Benz[a]anthracene, 8-methyl-	1	NA	960		ug/Kg
Benzene, (1-butylhexyl)-	1	NA	1600		ug/Kg
Benzene, (1-butyloctyl)-	2	NA	1400	2500	ug/Kg
Benzene, (1-ethyldecyl)-	1	NA	1400		ug/Kg
Benzene, (1-propyloctyl)-	1	NA	760		ug/Kg
Benzene, 1,3,5-trimethyl-	1	NA	1000		ug/Kg
Benzene, 1-chloro-3-isocyanato-	1	NA	1800		ug/Kg
Benzo[e]pyrene	1	NA	3300	6300	ug/Kg
Caryophyllene	1	NA	6700	6800	ug/Kg
Chrysene, 3-methyl-	1	NA	560		ug/Kg
Cyclohexanone, 3,3,5-trimethyl-	1	NA	33		ug/Kg
Cyclohexasiloxane, dodecamethyl-	3	NA	1200	22000	ug/Kg
Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-	1	NA	1600		ug/Kg
Cyclopentasiloxane, decamethyl-	1	NA	7600		ug/Kg
Cyclopentasiloxane, decamethyl-	2	NA	5700	7600	ug/Kg
Cyclotetrasiloxane, octamethyl-	1	NA	6000		ug/Kg
Decahydro-4,4,8,9,10-pentamethylnaphthal	3	NA	1300	2500	ug/Kg
Di-epi-.alpha.-cedrene	1	NA	220		ug/Kg
Di-epi-.alpha.-cedrene-(I)	1	NA	1600		ug/Kg
Fluoranthene, 2-methyl-	1	NA	9000		ug/Kg
Naphthalene, 1,2,3,4-tetrahydro-1,1,6-tr	1	NA	2200		ug/Kg
Naphthalene, 1,2,3,4-tetrahydro-1,6-dime	1	NA	2600		ug/Kg
Naphtho[2,3-b]thiophene	1	NA	2100		ug/Kg
Phenanthrene, 1-methyl-	1	NA	5400		ug/Kg
Phenanthrene, 1-methyl-7-(1-methylethyl)	4	NA	630	21000	ug/Kg
Phenanthrene, 2,3-dimethyl-	1	NA	1400		ug/Kg
Phenanthrene, 2-methyl-	1	NA	2700		ug/Kg

Table 3  
 Summary of Tentatively Identified Compounds in Sediment Samples\*  
 Riverside Avenue Site, Newark, New Jersey

<b>Tentatively Identified Compounds</b>	<b>Frequency of</b>	<b>Range of</b>	<b>Range of Detected Concentrations</b>		<b>Unit</b>
	<b>detection</b>	<b>Sample Quantitation</b>	<b>Low</b>	<b>High</b>	
Phenol, 2-(1,1-dimethylethyl)-5-methyl-	2	NA	670	1000	ug/Kg
Pyrene, 1-methyl-	1	NA	5200		ug/Kg
Pyrene, 2-methyl-	1	NA	340		ug/Kg
Pyrene, 4-methyl-	1	NA	1800		ug/Kg

\*TRIP REPORT - SOIL, SEDIMENT, AND GROUNDWATER SAMPLING, 29 RIVERSIDE AVENUE SITE, NEWARK, NEW JERSEY

Lockheed Martin (SERAS), Nov. 2010

Table 4  
 VOCs and SVOCs Detected in the USTs\*  
 Riverside Avenue Site, Newark, New Jersey

UST T-1

Compound	µg/L	
2,4-Dimethylphenol	5.2	J
Naphthalene	18.4	
Eucalyptol	50	JN
Chloroaniline	73	J
Camphor	93	J
Phenol, -tert-butyl-	200	J
Benzene	7.5	
Chloroethane	1.6	
Indane	66	JN
1H-indene-dihydro-methyl	23	J
1H-indene-dihydro-methyl	39	J
Adamantane	20	JN
1H-Indene-dihydro-dimethyl	24	J
1H-indene-dihydro-methyl	23	J
1H-indene-dihydro-methyl	45	J
1H-Indene, dimethyl-	54	J
Total TICs	5561.7	J
Total Unknown TICS	4757	J

UST T-2

Compound	µg/L	
Phenol	75.9	
Naphthalene	886	
Benzene, -propenyl-	1000	J
Phenyl--butene	110	J
methyl-indanol	47	J
1H-Inden-one, -dihydro-J	170	J
Benzene	336	
Ethylbenzene	837	
Toluene	129	
Xylene (total)	17100	
Benzene, 1,3,5-trimethyl-	1500	JN
Benzene, 1,2,4-trimethyl-	6100	JN
Indane	2300	JN
Total TICs	47280	J
Total Unknown TICS	16590	J

\*Samples collected by PMK Group

Table 4  
VOCs and SVOCs Detected in the USTs\*  
Riverside Avenue Site, Newark, New Jersey

UST T-3

Compound	µg/L
Fluoranthene	0.636
Fluorene	0.938
Phenanthrene	1.74
Pyrene	1.03
Naphthalene	208000
Benzeneacetaldehyde-trimethyl	1000 J
1H-Indene-dihydro-dimethyl	1300 J
1H-Indene-dihydro-dimethyl	480 J
Benzene, pentamethyl-	900 J
Naphthalene, 2-methyl-	1100 JN
Naphthalene, 1-methyl-	370 JN
Biphenyl	500 J
Diphenyl ether	1400 J
Benzene	63.6 J
Xylene (total)	130
Benzene, 1,2,4-trimethyl-	2700 JN
1H-indene-dihydro-methyl	2100 J
1H-indene-dihydro-methyl	5900 J
1H-indene-dihydro-methyl	6600 J
Naphthalene	7800 JN
Total TICs	332278 J
Total Unknown TICS	91930 J

UST T-5

Compound	µg/L
2,4-Dichlorophenol	4.1 J
2,4-Dimethylphenol	25.7
Phenol	192
2,4,6-Trichlorophenol	3.7 J
Naphthalene	52.3
Pyridine, -dimethyl-	12 J
Indane	120 JN
Benzinemethanol, -methyl-,	15 J
Phenyl--butene	13 J
1H-indene-dihydro-methyl	32 J
Cyclohexene--methanol,	30 J
Indole	290 JN
Diphenyl ether	25 JN
Benzene	84.9
Ethylbenzene	4470
Toluene	937
Xylene (total)	18400
Cyclohexane, methyl-	540 JN
Benzene, 1,2,4-trimethyl-	430 JN
Total TICs	27320 J
Total Unknown TICS	1643.3 J

\*Samples collected by PMK Group

Table 4  
VOCs and SVOCs Detected in the USTs\*  
Riverside Avenue Site, Newark, New Jersey

UST T-6

Compound	µg/L
Acenaphthene	91400
Acenaphthylene	12000
Anthracene	63200
Benzo(a)anthracene	35000
Benzo(a)pyrene	24400
Benzo(b)fluoranthene	11500
Benzo(g,h,i)perylene	13000
Chrysene	58800
bis(2-Ethylhexyl)phthalate	17900 J
Fluoranthene	12800
Fluorene	113000
Indeno(1,2,3-cd)pyrene	4430 J
Naphthalene	549000
Phenanthrene	506000
Pyrene	120000
Benzene, -dimethyl--nitro-	3200000 J
Nitro-m-xylene	6300000 J
Naphthalene dimethyl	1700000 J
Naphthalene dimethyl	900000 J
Naphthalene trimethyl	690000 J
Ethylbenzene	8160000
Methylene chloride	8100000
Tetrachloroethene	35500 J
Toluene	181000
1,1,1-Trichloroethane	99700 J
Trichloroethene	364000
Xylene (total)	29200000
alkane	3300000 J
Benzene, 1,3,5-trimethyl-	1100000 JN
Benzene, 1,2,4-trimethyl-	2300000 N JN
1H-indene-dihydro-methyl	910000 J
Naphthalene, methyl-	800000 J
Benzene, dimethyl-nitro-	1500000 J
Naphthalene, dimethyl-	1000000 J
Total TICs	1.08E+08 J
Total Unknown TICS	41650316 J

UST T-7

Compound	µg/L
Benzene	368 J
Ethylbenzene	14600
Tetrachloroethene	274 J
Toluene	6830
Xylene (total)	96800
Benzene, 1,3,5-trimethyl-	140000 JN
Benzene, 1,2,4-trimethyl-	340000 J
Naphthalene, methyl-	89000 J
Total TICs	1959872 J
Total Unknown TICS	1272000 J

\*Samples collected by PMK Group

Table 4  
VOCs and SVOCs Detected in the USTs\*  
Riverside Avenue Site, Newark, New Jersey

UST T-8

Compound	µg/L	
2,4-Dimethylphenol	3.5	J
Phenol	16.6	
Phenanthrene	0.813	
bis(2-Ethylhexyl)phthalate	13.2	
Naphthalene	6.2	
Acetophenone	31	JN
Phthalic anhydride	320	JN
Benzene	30.1	J
Ethylbenzene	4210	
Toluene	5110	
Xylene (total)	25700	
Acetone	270	JN
2-Butanone	3200	JN
Benzene, 1,2,4-trimethyl-	590	JN
Total TICs	42094.1	J
Total Unknown TICS	2591	J

UST T-8 sludge

Compound	µg/L	
bis(2-Ethylhexyl)phthalate	1440000	
Tetradecanoic acid	2700000	JN
n-Hexadecanoic acid	9500000	JN
Octadecanoic acid	1500000	JN
Benzene	5140	J
Ethylbenzene	6510000	
Toluene	2720000	
Xylene (total)	38200000	
Benzene, 1,3,5-trimethyl-	2300000	JN
Benzene, 1,2,4-trimethyl-	2600000	J
Naphthalene, decahydro-	1300000	J
Total TICs	1.29E+08	J
Total Unknown TICS	59790019	J

\*Samples collected by PMK Group

Table 4  
VOCs and SVOCs Detected in the USTs\*  
Riverside Avenue Site, Newark, New Jersey

UST T-9		UST T-10	
Compound	µg/L	Compound	µg/L
Acenaphthene	0.157	Di-n-octyl phthalate	224
Anthracene	0.252	bis(2-Ethylhexyl)phthalate	172
Benzo(a)anthracene	0.455	Benzene	0.6 J
Benzo(a)pyrene	0.475	Ethylbenzene	0.53 J
Benzo(b)fluoranthene	0.58	Toluene	0.66 J
Benzo(g,h,i)perylene	0.435	Xylene (total)	1.6 J
Benzo(k)fluoranthene	0.433	Methanethiol	23 J
2,4-Dimethylphenol	34.4	Total TICs	19530.79 J
Chrysene	0.42	Total Unknown TICS	19108.4 J
Fluoranthene	0.722		
Fluorene	0.242		
Indeno(1,2,3-cd)pyrene	0.411		
Phenanthrene	0.815		
Pyrene	0.903		
Naphthalene	142		
Methyl Isobutyl Ketone	5300 J		
Cyclohexanone, -trimethyl-	150 J		
Cyclohexanol, -trimethyl-	430 J		
Naphthalene decahydro-methy	150 J		
Benzene, -dimethyl--nitro-	150 J		
Benzene	169		
Ethylbenzene	12100		
Toluene	3510		
Xylene (total)	77000		
Acetone	3500 JN		
2-Butanone	17000 JN		
2-Butanol	900 JN		
Methyl Isobutyl Ketone	57000 JN		
Benzene, 1,3,5-trimethyl-	720 JN		
Benzene, 1,2,4-trimethyl-	2400 JN		
Total TICs	196192.1 J		
Total Unknown TICS	15530 J		

\*Samples collected by PMK Group

**DRAFT SITE INVESTIGATION REPORT**  
**1700-1712 AND 1702-1716 MCCARTER HIGHWAY**  
**BLOCK 614, LOTS 63 AND 64**  
**CITY OF NEWARK, ESSEX COUNTY, NEW JERSEY**  
 Birdsall Services Group Inc./PMK Group, Inc., Oct. 2009

Table 5  
VOCs and SVOCs Detected in the Subbasement Water\*  
Riverside Avenue Site, Newark, New Jersey

	BW-1	BW-2
	µg/l	µg/l
<b>Volatile Organic Compounds (VOC)</b>		
1,1,1-Trichloroethane	284	3,290
1,1-Dichloroethane	198	909
1,1-Dichloroethene	7.1 J	78.2
1,2-Dichlorobenzene	19.4	65
1,2-Dichloroethane		24.1
1,4-Dichlorobenzene	10.2	ND
Benzene	65.1	283
Chlorobenzene		48.7
Chloroethane	6.1 J	67.6
Chloroform	44	2,870
cis-1,2-Dichloroethene	15.4	31.4
Ethylbenzene	444	296
Methylene chloride	1,590	21,500
Tetrachloroethene	9.5 J	280
Toluene	684	4,460
Trichloroethene	14	148
Vinyl chloride	ND	12.9 J
Xylene (total)	216	1,910
TVOC	3,606.80	36,273.90
TIVOC	900 J	10,480 J
<b>Semi-Volatile Organic Compounds (SVOC)</b>		
1,2,4-Trichlorobenzene	58.9	55.3
1,2-Dichlorobenzene	16.3	19.4
1,3-Dichlorobenzene	3.9	0.84 J
1,4-Dichlorobenzene	13.7	1.1 J
2,4-Dimethylphenol	250	889
2-Chloronaphthalene	7.4	157
Acenaphthene	3.3	
Benzo(a)anthracene	1.8	
Benzo(a)pyrene	1.9	
Benzo(b)fluoranthene	5	
Benzo(g,h,i)perylene	1.9	
Benzo(k)fluoranthene	1.6	
bis(2-Ethylhexyl)phthalate		22.7
Chrysene	2.4	
Diethyl phthalate	111	219
Di-n-octyl phthalate	103	7.1
Fluoranthene	3.3	
Fluorene	3	

Indeno(1,2,3-cd)pyrene	1.5	
Naphthalene	11.2	58.5
Phenanthrene	8.2	
Phenol	2,850	4,190
Pyrene	3.1	
TSVOC	3,462.40	5,619.94
TISVOC	3,508 J	2,866 J

Individual TICs were not listed in the PMK report

Samples collected by PMK Group, Inc.\*

*DRAFT SITE INVESTIGATION REPORT*

*1700-1712 AND 1702-1716 MCCARTER HIGHWAY*

*BLOCK 614, LOTS 63 AND 64*

*CITY OF NEWARK, ESSEX COUNTY, NEW JERSEY*

Birdsall Services Group Inc./PMK Group, Inc., Oct. 2009

Table 6  
VOCs and SVOCs Detected in the Subbasement Samples\*  
Riverside Avenue Site, Newark, New Jersey

	Subbasement Water			Subbasement Sediment		
	B7-BW-01 µg/L	B7-BW-02 µg/L	B7-BW-03 µg/L	B7-SED-02 µg/kg	B7-SED-03 µg/kg	B7-SED-04 µg/kg
1,1-Dichloroethene	6.7 J		5.3 J			
1,1,2-Trichloro-1,2,2-trifluoroethane				150 J	3,700	27,000
Acetone	350		290	250 J	220 J	11,000 J
Methyl acetate	13		12 J			12,000 J
Methylene chloride	240	1.5 J	210 J	540	560	220,000
1,1-Dichloroethane	150		140 J			
2-Butanone	370		310		230 J	120,000
Chloroform	10					110,000
1,1,1-Trichloroethane	190		190 J		230 J	1,100,000
Carbon tetrachloride	33 J					
Benzene	24		24		430	
1,2-Dichloroethane					60 J	5,200 J
Trichloroethene	19		19			
Methylcyclohexane					120 J	2,900 J
4-Methyl-2-pentanone	55					24,000 J
Toluene	430	1.6 J	420	3,100	8,300	230,000
Tetrachloroethene	7.6 J		7.3 J	110 J	2,100	280,000
2-Hexanone						2,200
Chlorobenzene	2.8 J		2.6 J	100 J	300	2,200 J
Ethylbenzene	390		370	3,900	12,000	58,000
o-Xylene	74		71	1,600	61,000	91,000
m,p-Xylene	110		110	2,000	7,500	240,000
Styrene	40		38	860	2,800	230,000
Isopropylbenzene	15		13	900	3,800	
1,4-Dichlorobenzene	4.2 J		4.3 J	620	2,600	5,600 J
1,2-Dichlorobenzene	23		22	310	1,300	59,000
1,2,4-Trichlorobenzene	55		53	820	4,100	290,000
1,2,3-Trichlorobenzene	14		13	260	1,400	58,000
Phenol	500	13,000				2,200,000
2-Methylphenol	1,100	13,000	33 J	8,900 J		4,700,000
Acetophenone	61 J		17 J			430,000 J
4-Methylphenol	90 J	4,700				1,400,000
Nitrobenzene	64 J					
2,4-Dimethylphenol	64 J	670 J	12 J			430,000 J
4-Chloroaniline	24 J		14 J	46,000 J	70,000 J	
Caprolactam			11 J			
2-Methylnaphthalene				4,000 J	4,200 J	
1,1'-Biphenyl			3.5 J			56,000 J
2-Choronaphthalene						110,000 J
Diethylphthalate	41 J	250 J	35 J			240,000 J
Fluoranthene					4,400 J	
Bis(2-ethylhexyl)phthalate						230,000 J

## Tentatively Identified Compounds

Benzene, 1,2,3,4-tetramethyl-		35 JN				
Benzene, 1,2,3-trimethyl- (01)	150 JN					
Benzene, 1,2,3-trimethyl- (01)		260		11000 JN	15000 JN	
Benzene, 1,2,3-trimethyl- (02)	260 JN	83 JN		3300 JN	7500 JN	
Benzene, 1,2,3-trimethyl- (03)	85 JN					
Benzene, 1,2,4,5-tetramethyl-		49 JN			3400 JN	
Benzene, 1,2,4,5-tetramethyl- (01)	36 JN			1500 JN		
Benzene, 1,2,4,5-tetramethyl- (02)	50 JN			1800 JN		

Benzene, 1,3,5-trichloro-								
Benzene, 1,3,5-trimethyl-			150 JN					
Benzene, 1,3,5-trichloro-								
Benzene, 1,3,5-trimethyl-					6600 JN	22000 JN		
Benzene, 1,3,5-trimethyl- (01)								35000 JN
Benzene, 1,3,5-trimethyl- (02)								66000 JN
Benzene, 1,3-diethyl-	25 JN	24 JN		940 JN				
Benzene, 1-chloro-2-methyl-							67000 JN	
Benzene, 1-chloro-2-nitro-			1900 JN					
Benzene, 1-chloro-3-nitro-								
Benzene, 1-chloro-4-nitro-								
Benzene, 1-ethyl-2,4-dimethyl-	62 JN	61 JN			2400 JN			
Benzene, 1-ethyl-2-methyl-	100 JN	100 JN		3600 JN	8300 JN			
Benzene, 1-ethyl-2-methyl- (01)								
Benzene, 1-ethyl-2-methyl- (02)								
Benzene, 1-ethyl-3-methyl-	250 JN	260 JN		10000 JN	21000 JN	33000 JN		
Benzene, 1-ethyl-3-methyl- (01)								
Benzene, 1-methyl-2-(1-meth...				2900 JN	7000 JN			
Benzene, 1-methyl-3-(1-meth... (01)								
Benzene, 1-methyl-3-(1-meth... (02)								
Benzene, 2-ethyl-1,3-dimethyl-				990 JN				
Benzene, 2-ethyl-1,4-dimethyl-					1900 JN			
Benzene, bromo-			1600 JN					
Benzene, methoxy-							120000 JN	
Benzene, propyl-	55 JN	53 JN		2700 JN	6000 JN			
Benzoic acid, 2-hydroxy-, 3...								
Benzinemethanol, alpha.-me...				1100 JN				
Benzenesulfonamide, 4-methyl-								
Benzoic acid				17000 JN				
Benzyl alcohol				23000 JN				
Bicyclohexyl, 4-phenyl-								
cis-1-Ethyl-3-methyl-cyclo...					6500 JN			
Diisopropyl Ether	790 JN	730 JN					110000 JN	
Formamide, N,N-dimethyl-								
Methyl Salicylate								
Naphthalene, 1,2,3,4-tetrah...	45 JN	44 JN					300000 JN	
Naphthalene, 1,2,3,4-tetrah... (01)				1200 JN	3100 JN			
Naphthalene, 1,2,3,4-tetrah... (02)				1000 JN	2400 JN			
Naphthalene, 1-chloro- (01)							19000 JN	
Naphthalene, 1-chloro- (02)							180000 JN	
Naphthalene, 1-methyl-				1500 JN	4000 JN			
Naphthalene, 2-chloro-								
Oxirane, trimethyl-								
p-Dicyclohexylbenzene								
Phenol, 2,3,5-trimethyl-				1300 JN				
Phenol, 2,4,5-trimethyl-								
Phenol, 2,6-dimethyl-				3100 JN				
Propane, 1-bromo-2-methyl-	130 JN	120 JN					490000 JN	
p-Xylene (01)								
p-Xylene (02)								
Quinoline								
Stannane, chlorotris(2-meth...								
Stannane, tetrabutyl- (01)								
Stannane, tetrabutyl- (03)								
Stannane, tributylchloro-								
Styrene								

\*Samples collected by Tetra Tech

Table 7  
VOC and SVOC Analytes Occurring in Both Subbasement and SERAS Samples  
Riverside Avenue Site, Newark, New Jersey

Subbasement	SERAS Soil
1,1'-Biphenyl	1,1'-Biphenyl
2-Methylnaphthalene	2-Methylnaphthalene
Acetone	Acetone
Acetophenone	Acetophenone
Benzene	Benzene
Benzene, 1,2,4,5-tetramethyl-	Benzene, 1,2,4,5-tetramethyl-
Benzene, 1,3-diethyl-	Benzene, 1,3-diethyl-
Benzene, 1-chloro-2-nitro-	Benzene, 1-chloro-2-nitro-
Benzene, 1-ethyl-2,4-dimethyl-	Benzene, 1-ethyl-2,4-dimethyl-
Benzene, 1-methyl-2-(1-meth...)	Benzene, 1-methyl-2-(1-methylethyl)-
Benzene, 2-ethyl-1,3-dimethyl-	Benzene, 2-ethyl-1,3-dimethyl-
Benzene, 2-ethyl-1,4-dimethyl-	Benzene, 2-ethyl-1,4-dimethyl-
Benzene, propyl-	Benzene, propyl-
Bis(2-ethylhexyl)phthalate	Bis(2-ethylhexyl)phthalate
Caprolactam	Caprolactam
Ethylbenzene	Ethylbenzene
Fluoranthene	Fluoranthene
Isopropylbenzene	Isopropylbenzene
m,p-Xylene	m,p-Xylene
o-Xylene	o-Xylene
Methyl acetate	Methyl acetate
Methylcyclohexane	Methylcyclohexane
Methylene chloride	Methylene chloride
Naphthalene, 1-methyl-	Naphthalene, 1-methyl-
Stannane, tributylchloro-	Stannane, tributylchloro-
Toluene	Toluene
Acenaphthene	Acenaphthene
Benzo(a)anthracene	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(a)pyrene
Benzo(b)fluoranthene	Benzo(b)fluoranthene
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene
Benzo(k)fluoranthene	Benzo(k)fluoranthene
Chrysene	Chrysene
Fluorene	Fluorene
Indeno[1,2,3-cd]pyrene	Indeno[1,2,3-cd]pyrene
Naphthalene	Naphthalene
Phenanthrene	Phenanthrene
Pyrene	Pyrene

Tetra Tech and PMK Group data

Subbasement	SERAS Groundwater
2-Methylnaphthalene	2-Methylnaphthalene
2-Methylphenol	2-Methylphenol
4-Chloroaniline	4-Chloroaniline
4-Methylphenol	4-Methylphenol
Benzene	Benzene
Benzene, 1,2,3-trimethyl-	Benzene, 1,2,3-trimethyl-
Benzene, 1,2,4,5-tetramethyl-	Benzene, 1,2,4,5-tetramethyl-
Benzene, 1,3-diethyl-	Benzene, 1,3-diethyl-
Benzene, 1-chloro-2-methyl-	Benzene, 1-chloro-2-methyl-
Benzene, 1-ethyl-3-methyl-	Benzene, 1-ethyl-3-methyl-
Benzene, 1-methyl-2-(1-meth...)	Benzene, 1-methyl-2-(1-methylethyl)-
Benzene, 2-ethyl-1,3-dimethyl-	Benzene, 2-ethyl-1,3-dimethyl-
Benzene, 2-ethyl-1,4-dimethyl-	Benzene, 2-ethyl-1,4-dimethyl-
Benzene, propyl-	Benzene, propyl-
Bis(2-ethylhexyl)phthalate	Bis(2-ethylhexyl)phthalate
Caprolactam	Caprolactam
Diethyl phthalate	Diethyl phthalate
Fluoranthene	Fluoranthene
Isopropylbenzene	Isopropylbenzene
m,p-Xylene	m,p-Xylene
Methylcyclohexane	Methylcyclohexane
Methylene chloride	Methylene chloride
o-Xylene	o-Xylene
Phenol, 2,6-dimethyl-	Phenol, 2,6-dimethyl-
Toluene	Toluene
Diethyl phthalate	Diethyl phthalate
Naphthalene	Naphthalene
Phenanthrene	Phenanthrene
Pyrene	Pyrene

Tetra Tech and PMK Group data

Subbasement	SERAS Sediment
4-Chloroaniline	4-Chloroaniline
Bis(2-ethylhexyl)phthalate	Bis(2-ethylhexyl)phthalate
Caprolactam	Caprolactam
Naphthalene, 1,2,3,4-tetrahydro-1,1,6-tr...	Naphthalene, 1,2,3,4-tetrahydro-1,6-dime...
Phenol	Phenol
Acenaphthene	Acenaphthene
Benzo(a)anthracene	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(a)pyrene
Benzo(b)fluoranthene	Benzo(b)fluoranthene
Benzo(k)fluoranthene	Benzo(k)fluoranthene
Di-n-octyl phthalate	Di-n-octyl phthalate
Fluorene	Fluorene
Indeno[1,2,3-cd]pyrene	Indeno[1,2,3-cd]pyrene
Naphthalene	Naphthalene
Phenanthrene	Phenanthrene
Pyrene	Pyrene

Tetra Tech and PMK Group data

Table 8  
VOC and SVOC Analytes Occurring in Both UST and SERAS Samples  
Riverside Avenue Site, Newark, New Jersey

Underground Storage Tanks	SERAS Soil
Biphenyl	1,1'-Biphenyl
Naphthalene, 2-methyl-	2-Methylnaphthalene
Acenaphthene	Acenaphthene
Acenaphthylene	Acenaphthylene
Acetone	Acetone
Acetophenone	Acetophenone
Anthracene	Anthracene
Benzene	Benzene
Benzene, 1,3,5-trimethyl-	Benzene, 1,3,5-trimethyl-
Benzo(a)anthracene	Benzo(a)anthracene
Benzo(b)fluoranthene	Benzo(b)fluoranthene
Benzo(a)pyrene	Benzo(a)pyrene
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene
Benzo(k)fluoranthene	Benzo(k)fluoranthene
bis(2-Ethylhexyl)phthalate	Bis(2-ethylhexyl)phthalate
Chrysene	Chrysene
Cyclohexanone, -trimethyl-	Cyclohexanone, 3,3,5-trimethyl-
Ethylbenzene	Ethylbenzene
Indeno[1,2,3-cd]pyrene	Indeno[1,2,3-cd]pyrene
Fluoranthene	Fluoranthene
Fluorene	Fluorene
Methylene chloride	Methylene chloride
Naphthalene dimethyl	Naphthalene, 1,2-dimethyl-
Naphthalene, 1-methyl-	Naphthalene, 1-methyl-
Naphthalene, methyl-	Naphthalene, dimethyl-
Naphthalene, dimethyl-	Naphthalene, 2,3-dimethyl-
	Naphthalene, 2,6-dimethyl-
	Naphthalene, 2,7-dimethyl-
Naphthalene decahydro-methyl	Naphthalene, decahydro-2-methyl-
Naphthalene trimethyl	Naphthalene, 1,4,6-trimethyl-
Naphthalene, decahydro-	Naphthalene, decahydro-, trans-
Xylene (total)	Naphthalene, decahydro-
	m,p-Xylene
	o-Xylene
n-Hexadecanoic acid	n-Hexadecanoic acid
Octadecanoic acid	Octadecanoic acid
Phenanthrene	Phenanthrene
Phenol, -tert-butyl-	Phenol, p-tert-butyl-
Phthalic anhydride	Phthalic anhydride
Pyrene	Pyrene
Toluene	Toluene

PMK data

Underground Storage Tanks	SERAS Groundwater
Benzene	Benzene
Benzene, 1,2,4-trimethyl-	Benzene, 1,2,4-trimethyl-
Benzene, dimethyl-nitro-	Benzene, 1,2-dimethyl-4-nitro-
bis(2-Ethylhexyl)phthalate	Bis(2-ethylhexyl)phthalate
Cyclohexanone, -trimethyl-	Cyclohexanone, 3,3,5-trimethyl-
Ethylbenzene	Ethylbenzene
Fluoranthene	Fluoranthene
Xylene (total)	m,p-Xylene
	o-Xylene
Naphthalene	Naphthalene
Methylene chloride	Methylene chloride
Octadecanoic acid	Pentadecane, octahydro-
Phenanthrene	Phenanthrene
Phenol, -tert-butyl-	Phenol, m-tert-butyl-
Phthalic anhydride	Phthalic anhydride
Pyrene	Pyrene
Toluene	Toluene

PMK data

Underground Storage Tanks	SERAS Sediment
Naphthalene, methyl-	2-Methylnaphthalene
Naphthalene, 2-methyl-	Acenaphthene
Acenaphthene	Acenaphthylene
Acenaphthylene	Anthracene
Anthracene	Benzo(a)anthracene
Benzo(a)anthracene	Benzo(a)pyrene
Benzo(a)pyrene	Benzo(b)fluoranthene
Benzo(b)fluoranthene	Benzo(g,h,i)perylene
Benzo(g,h,i)perylene	Benzo(k)fluoranthene
Benzo(k)fluoranthene	bis(2-Ethylhexyl)phthalate
bis(2-Ethylhexyl)phthalate	Chrysene
Chrysene	Chrysene
Cyclohexane, methyl-	Chrysene, 3-methyl-
Cyclohexanone, -trimethyl-	Cyclohexanone, 3,3,5-trimethyl-
Fluoranthene	Fluoranthene
Fluorene	Fluorene
Indeno[1,2,3-cd]pyrene	Indeno[1,2,3-cd]pyrene
Naphthalene	Naphthalene
Naphthalene, dimethyl-	Naphthalene, 1,2,3,4-tetrahydro-1,6-dime
Naphthalene dimethyl	Naphthalene, 1,2,3,4-tetrahydro-1,6-tr
Naphthalene trimethyl	Phenanthrene
Phenanthrene	Phenol
Phenol	Pyrene
Pyrene	Pyrene

PMK data